

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
RECCO AB)	WT Docket No. 14-176
)	
Request for Waiver of Part 90 of the Commission's)	
Rules)	

ORDER

Adopted: December 17, 2015

Released: December 18, 2015

By the Deputy Chief, Mobility Division, Wireless Telecommunications Bureau:

1. *Introduction.* This *Order* addresses a request filed by RECCO AB (RECCO) for waiver of Section 90.353(h) and (i) of the Commission's Rules¹ to permit equipment authorization and licensing under Part 90 of the Commission's Rules for an avalanche rescue system.² For the reasons set forth below, we grant the waiver request in part subject to the conditions specified herein, and deny the request in part. Specifically, we grant the request for waiver of Section 90.353(h) on a secondary basis to other authorized services, and we deny the request for waiver of Section 90.353(i).

2. *Background.* The RECCO system is a two-part technology consisting of a handheld detector and a passive reflector that is integrated into apparel, helmets, protection gear or boots.³ The signal from the reflector, when energized by the signal from the detector, is received by the detector and enables search and rescue personnel to home in on the location of skiers, snowboarders and others buried in avalanches. RECCO states that its system is a standard tool for avalanche rescue worldwide, and has facilitated the location of many avalanche victims.⁴ It states that RECCO reflectors are integrated by almost all major manufacturers of ski and mountain equipment, so many people visiting the mountains are equipped with RECCO reflectors.⁵

3. The detector for use in the United States transmits a signal on frequency 902.85 MHz, which is then doubled and re-radiated on frequency 1805.7 MHz by the reflector. RECCO argues that it is desirable for RECCO detectors in the United States to use a frequency as close as possible to the frequency used by RECCO detectors in Europe (frequency 866.9 MHz) because a more distant frequency could result in a shorter effective search range.⁶

¹ 47 C.F.R. § 90.353(h), (i).

² Petition for Waiver, filed by RECCO AB on Sept. 9, 2014 (Petition). At the request of Commission staff, RECCO later provided additional information regarding how the system functions. *See* Electronic mail messages dated July 17 and September 25, 2015 from Christina Lysdahl to Tim Maguire.

³ Petition at 2.

⁴ *Id.* at 2, 4.

⁵ *Id.* at 2.

⁶ *Id.* at 2-3. In the United States, frequency 866.9 MHz is within a spectrum block designated for Specialized Mobile Radio Service use. *See* 47 C.F.R. § 90.681.

4. The 902-928 MHz band is allocated on a primary basis to the Federal Government Radiolocation Service.⁷ Authorized non-Federal operations, which must not cause interference to Federal stations in the band, include Part 18 industrial, scientific, and medical (ISM) devices; the Part 90 Location and Monitoring Service (LMS), which also must tolerate interference from ISM devices; and the Amateur Radio service, which also must tolerate interference from and not cause interference to ISM devices and LMS operations.⁸ Part 15 devices are also authorized.⁹ The 1780-1850 MHz band is allocated to the Federal Fixed, Mobile, and Space Operation Services.¹⁰

5. A waiver of Section 90.353 is required because Section 90.353(h) does not permit non-vehicular location services in the 902-904 MHz band.¹¹ The rule also imposes an antenna height limit of fifteen meters above ground, and the RECCO detector is intended for use from a helicopter in certain situations. In addition, RECCO requests a waiver of Section 90.353(i), which provides that non-multilateration LMS licenses will be issued to non-government entities only on a site-by-site basis.¹²

6. RECCO submitted with its waiver request a test report indicating that the detector complies with the LMS technical specifications.¹³ It argues that the system is unlikely to cause interference because the detector operates with a twenty percent duty cycle (it repeatedly transmits for twenty milliseconds and is silent for eighty milliseconds) and the transmit and receive antennas on the detector are directional, which helps to pinpoint the victim and reduce the area of the transmissions.¹⁴ When the detector is in use, it is constantly directed toward the ground, and the maximum distance for detecting a RECCO reflector is twenty to forty meters (depending on factors such as snow condition and depth).¹⁵ The average time of operation of a detector is less than three hours per year.¹⁶ RECCO also asserts that co-channel radio systems are unlikely to be operating in or near an avalanche scene.¹⁷

7. RECCO states that the reflector re-radiates with a signal power of approximately ten nanowatts, which RECCO claims is comparable to the Part 15 field strength limit above 960 MHz.¹⁸ It states that the detector operator will adjust the transmitting power as he or she approaches the source of the reflected signal so that the audio level from the detector's loudspeaker does not become unpleasantly strong. RECCO notes, however, that if the detector transmitting power is not turned down as the operator

⁷ See 47 C.F.R. § 2.106.

⁸ See 47 C.F.R. § 2.106 notes US 218, US275.

⁹ See 47 C.F.R. §§ 15.245, 15.247, 15.249.

¹⁰ See 47 C.F.R. § 2.106.

¹¹ See 47 C.F.R. § 90.353(h).

¹² See 47 C.F.R. § 90.353(i).

¹³ See Petition at Enclosure.

¹⁴ Petition at 2-3. The detector contains a transmitter on 902.85 MHz with an integrated Yagi antenna and a receiver on 1805.7 MHz with an associated patch antenna.

¹⁵ *Id.* at 3.

¹⁶ *Id.* at 2.

¹⁷ *Id.* at 3.

¹⁸ *Id.* (citing 47 C.F.R. § 15.209).

approaches, then the reflector will re-radiate with a greater field strength level.

8. The Wireless Telecommunications Bureau sought comment on the waiver request.¹⁹ The only commenter was the American Radio Relay League, Inc. (ARRL).

9. *Discussion.* Section 1.925 of the Commission's Rules provides that we may grant a waiver if it is shown that (a) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and grant of the requested waiver would be in the public interest; or (b) in light of unique or unusual circumstances, application of the rule(s) would be inequitable, unduly burdensome, or contrary to the public interest, or the applicant has no reasonable alternative.²⁰ For the reasons set forth below, we conclude that RECCO has met the first prong of the waiver standard, and that grant of a waiver of Section 90.353(h) is warranted, subject to certain conditions. We deny the request for waiver of Section 90.353(i).

10. With respect to whether the underlying purpose of the rules would not be served or would be frustrated by application to the instant case, we note that one purpose of allocating different spectrum bands to different services is to prevent harmful interference.²¹ ARRL contests some of RECCO's claims regarding the RECCO system's potential to interfere with other operations. ARRL states that the band is used by Amateur Radio Service licensees primarily for weak signal experiments, and repeaters may be located in high mountainous areas.²² It argues that the RECCO system's pulse repetition rate is so high that the duty cycle does not ameliorate interference concerns, and that routine use from helicopters undermines RECCO's claim that the signal remains near the ground.²³ We conclude that the relatively low power, limited number and the limited use of RECCO detectors in remote ski areas greatly reduce the potential for interference. Helicopters from which the RECCO detector may be used must fly close to the ground in order to receive the re-radiated signal, due to its low power and short range, thereby limiting the interference potential.

11. We also conclude that grant of the requested waiver would be in the public interest, for RECCO transmitters operating on 902.85 MHz will be compatible with the large number of RECCO reflectors already in garments and boots that are currently sold worldwide. ARRL argues that a waiver should not be granted solely to accommodate a manufacturer's desire to use the same frequency band that its equipment uses abroad.²⁴ This is not such as case, however, for RECCO's proposed frequency was

¹⁹ See Wireless Telecommunications Bureau Seeks Comment on RECCO AB Request for Waiver of Location and Monitoring Service Rules to Permit Certification and Use of an Avalanche Rescue System, *Public Notice*, WT Docket No. 14-176, 29 FCC Rcd 12597 (WTB MD 2014); Wireless Telecommunications Bureau Extends Comment Periods re: RECCO AB Request for Waiver of Location and Monitoring Service Rules to Permit Certification and Use of an Avalanche Rescue System and Emergency Radio Service, Inc. Request for Waiver to Operate on Frequencies Designated for Central Station Protection Service, *Public Notice*, WT Docket Nos. 14-176 & 14-182, 29 FCC Rcd 13765 (WTB MD 2014).

²⁰ 47 C.F.R. § 1.925(b)(3); see also *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

²¹ See, e.g., *Boeing Company, Order and Authorization*, 16 FCC Rcd 22645, 22653 ¶ 17 (IB/OET 2001) (conditioning a waiver on the implementation of certain design features to avoid harmful interference to primary and secondary users so that "one general purpose of the Table of Allocations - preventing harmful interference - would not be undermined").

²² ARRL comments at 3, 6-7.

²³ *Id.* at 2.

²⁴ ARRL comments at 4 (citing Terry Mahn, Esq., *Letter*, 21 FCC Rcd 14409 (WTB MD 2006)).

chosen for performance purposes.²⁵ Specifically, use in the United States of a different frequency band would impede efforts to locate avalanche victims who purchased (domestically or abroad) gear equipped with RECCO reflectors optimized for use with the European frequency, because the effective search range would be reduced. We believe it is important that the detectors used in the United States be compatible with the reflectors currently worn by skiers.

12. We will treat the RECCO detector-reflector equipment as a composite system operating under Parts 90 and 15.²⁶ Because the reflector receives the power from the detector rather than a battery or any such power source, it will be authorized as part of the detector. Under normal operating conditions, the reflector radiates well below the Part 15 emission limits.²⁷ As noted above, that limit can be exceeded if the detector operator does not reduce the detector power as he or she approaches the reflector in close proximity, but it appears from the record that such circumstances are incidental to normal operations. We believe, therefore, especially given the temporal and geographic limitations on the use of the equipment, that the RECCO reflector will operate within Part 15 limits and will not cause interference to other services.

13. We agree with ARRL that other authorized co-channel services should not have to protect, or tolerate interference from, operation of RECCO's system pursuant to this waiver.²⁸ Consequently, we will require RECCO systems to not cause interference to, and tolerate interference from, Government Radiolocation, ISM, LMS and Amateur operations.

14. The caption of the waiver request indicates that RECCO also requests a waiver of Section 90.353(i), but the text does not address such a waiver. Section 90.353(i) provides that non-multilateration LMS licenses will be issued to non-government entities on a site-by-site basis.²⁹ The Commission rejected a blanket licensing approach for non-multilateration LMS systems because such a licensing scheme would make it difficult to ascertain the location of LMS transmitters.³⁰ RECCO offers no explanation for why requiring its system to be licensed on a site-by-site basis would be inconsistent with this purpose, or would be burdensome. We therefore deny the request for waiver of Section 90.353(i).

15. We therefore grant the requested waiver of Section 90.953(h) to permit licensing and operation of the RECCO detector, subject to the following conditions:

- Use is limited to ski resorts and other areas of high potential for avalanches.
- Use is limited to actual emergencies involving threats to safety of life, and necessary training

²⁵ Cf. ReconRobotics, Inc., *Order on Reconsideration*, WP Docket No. 08-63, 26 FCC Rcd 5895, 5898 ¶ 10 (WTB/PSHSB/OET 2011).

²⁶ See 47 C.F.R. § 2.1033(e).

²⁷ RECCO states that the reflector re-radiates a signal power of approximately ten nanowatts, about 10 dB below the corresponding limit for 1805.7 MHz of 500 uv/m at 3 meters, see 47 C.F.R. § 15.209(a). See Petition at 3.

²⁸ ARRL comments at 6.

²⁹ See 47 C.F.R. § 90.353(i).

³⁰ See Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, *Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, PR Docket No. 93-61, 12 FCC Rcd 13942, 13952 ¶ 24 (1997).

related to such operations.

- RECCO systems may not cause interference to and must tolerate interference from Government Radiolocation, ISM, LMS and Amateur operations.
- RECCO must obtain equipment authorization for the RECCO transmitter and reflector. The detector and reflector must meet all the appropriate technical rules.³¹ A copy of this *Order* shall be submitted with the equipment authorization application.

16. Operation of the RECCO detector will require a separate Commission authorization. Applications must reference this *Order* (by the DA number set forth above). Applicants must specify the proposed area of operation as a point-radius, with a radius no larger than necessary to encompass the ski resort or other area being served;³² and the requested frequency of 902.85 MHz. Part 90 frequency coordination³³ is not required. No operation is authorized prior to license grant, and no applications will be granted until RECCO obtains equipment authorization. Reflectors will not require separate licensing.

17. *Conclusion and Ordering Clauses.* We conclude that RECCO AB has shown good cause for waiver of Part 90 of the Commission's Rules to permit equipment authorization and customer licensing for the RECCO avalanche rescue system. Therefore, we grant RECCO a waiver of Section 90.353(h), subject to the conditions set forth above. Our grant of the waiver request is without prejudice to any Enforcement Bureau action concerning operation of the RECCO system prior to proper authorization.

18. Accordingly, IT IS ORDERED, pursuant to Sections 4(i) and 303(i) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(i), and Section 1.925 of the Commission's Rules, 47 C.F.R. § 1.925, that the Request for Waiver filed by RECCO AB on September 9, 2014, IS GRANTED IN PART SUBJECT TO THE CONDITIONS set forth in paragraphs 15 and 16, *supra*, and DENIED IN PART.

19. This action is taken under delegated authority pursuant to Sections 0.131 and 0.331 of the Commission's Rules, 47 C.F.R. §§ 0.131, 0.331.

FEDERAL COMMUNICATIONS COMMISSION

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³¹ The reflector must be tested under normal operating conditions to the Part 15 radiation limits of Section 15.209. The report should be included with the filing.

³² License applications in particular areas may be denied in order to protect Federal radiolocation facilities.

³³ See 47 C.F.R. § 90.175.